Gas Networks Innovation Strategy

April 2026

Authored by:

Cadent Your Gas Network

national gas

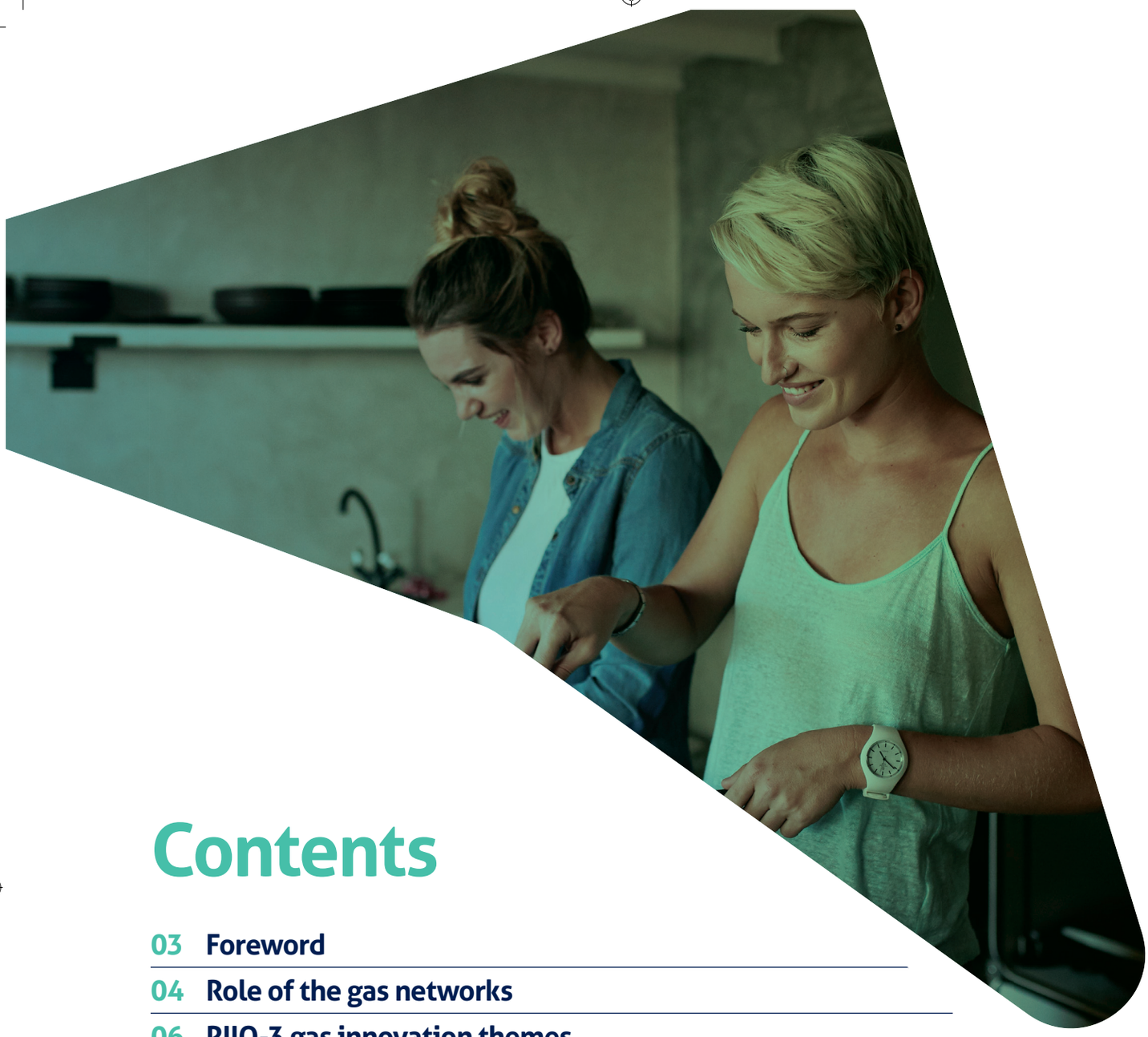
Northern Gas Networks

SGN

WALES&WEST UTILITIES

In conjunction with:

fen future energy networks



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Sian Rowlands,
Innovation & Funding Manager and Chair of the Gas Innovation Governance Group

Foreword

The gas industry is entering a period of profound change and innovation is critical to a smooth transition. It will deliver technological change, while also supporting our role in providing the energy homes, businesses, industry and power generation need, particularly during periods of peak demand.

Gas networks are committed to maintaining safe, reliable and resilient services today while preparing the system for a lower carbon future. Innovation plays a key role in enabling a whole energy system approach. As electricity, gas, hydrogen and other low carbon technologies become increasingly interconnected, coordinated planning and shared system understanding are essential. Gas networks also have an important role to play in supporting electrification, providing flexibility and enabling the integration of green gases such as biomethane and hydrogen. During RIIO-3, safety, efficiency and sustainability will be paramount. Maintaining the highest safety standards remains non-negotiable, alongside improving operational efficiency to deliver best value for customers and stakeholders. At the same time, networks must reduce their environmental impact by lowering emissions, tackling gas leakage and minimising waste across operations.

Above all, customers remain at the heart of the transition. Innovation must support clearer communication, more inclusive services and affordable pathways to net zero. Through collaboration, evidence-based decision making and continued investment in innovation, the gas industry can deliver a resilient, low carbon energy system that continues to meet the needs of customers and society through RIIO-3 and beyond.

The gas network has been at the heart of Britain's energy system for decades and will be for decades to come. We have adapted before - not least from towns gas to natural gas – and as an industry we are enabling that transition as green gas comes onto the system, and the demands on it change.

Role of the gas networks

The UK's gas networks comprise the National Transmission System (NTS) and four Gas Distribution Networks (GDNs).

The NTS, owned and operated by National Gas, is a high-pressure backbone of nearly 5,000 miles of pipelines transporting gas from offshore fields, European interconnectors, LNG terminals, and storage sites across Great Britain. Gas then feeds into regional GDNs – Cadent, Northern Gas Networks, SGN, and Wales & West Utilities – which deliver it to homes and businesses, serving around 23 million properties nationwide. Together, these networks ensure energy security and support the transition toward a low-carbon future.

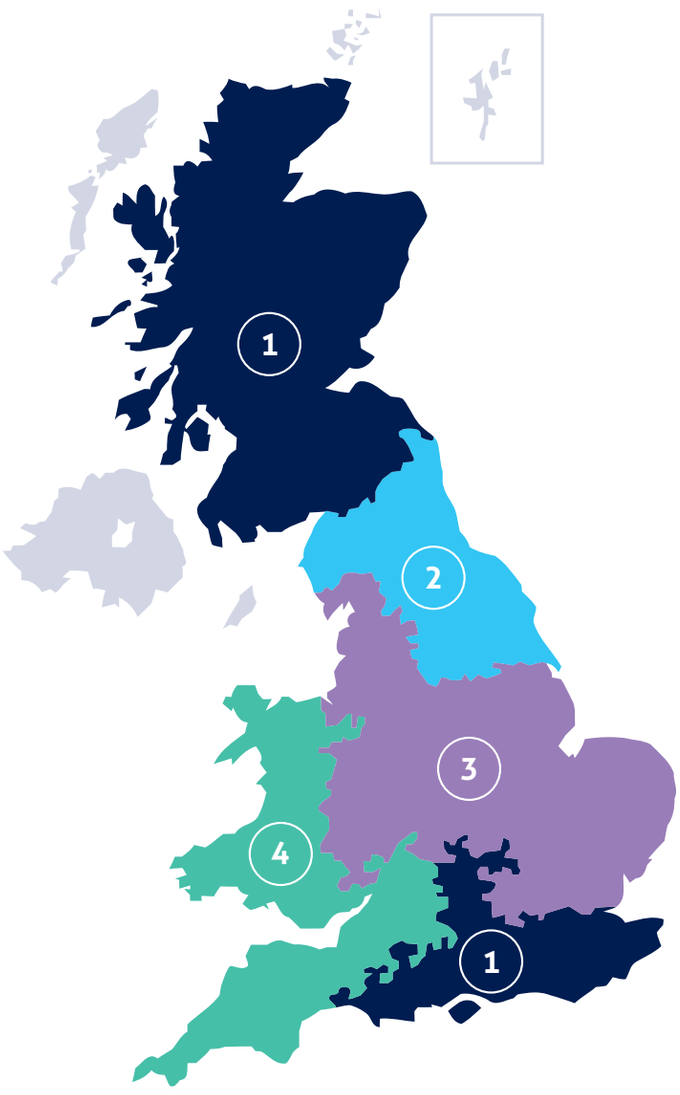
Future Energy Networks (FEN) acts as a strategic focus and channel of communication between industry, government, trade bodies and innovators. We promote the interests and good standing of the industry and undertake a range of innovation activities to bring together experts and innovators to progress the industry's contribution to Net Zero Carbon by 2050.

Gas Transmission

national gas

Katie Petherbridge
Head of Innovation

National Gas Innovation will prioritise solutions that unlock decarbonisation and operational excellence, delivered through deep collaboration with our industry partners and business teams to deliver value for customers.



SGN

Simon Joyce
Principal Engineer & Head of Innovation Futures

Our RIIO-3 innovation strategy strengthens today's network with safer, more efficient and sustainable operations. It accelerates the network transition through digitalisation, whole-system approaches and green-gas innovation, and enables a future-ready, evidence-led pathway to net zero that enhances resilience and protects vulnerable customers.

Northern Gas Networks

Paul Chapman
Head of Innovation Strategy, Northern Gas Networks

Our RIIO-3 innovation strategy aims to drive a fair, just and customer-focused transition to net zero by developing new technologies and innovative practices that support vulnerable customers, strengthen the energy transition evidence base, and enable efficient, future-ready network operations.

Gas Distribution

WALES&WEST UTILITIES

Sian Rowlands
Innovation & Funding Manager

We want to invest in innovation that supports a secure and resilient network that is decarbonised, provides long-term value for money for consumers, and supports the most vulnerable in our society.

Cadent
Your Gas Network

Chris Rison
Head of Smart Network

In RIIO-3 I look forward to the gas networks pivoting to lower cost and greener energy systems that inter-operates with electrical networks ever more closely. With the right mix of tech and collaborative intent, we can collectively deliver World class resilience, efficiency and sustainability that customers need and expect the energy industry to get right for the country's future.

RIIO-3 gas innovation themes

Our Innovation Strategy to begin RIIO-3 is centred around delivering 'a fair and low carbon gas future' for this country and we believe these five themes will deliver on this ambition.

Throughout all of our collective RIIO-3 Business Plans and in consultation with our stakeholders we have selected these areas to focus our efforts on as this price control period develops. We need to innovate in whole systems thinking, in digital excellence, providing a seamless connection experience, driving down our environmental footprint and all whilst ensuring that our customers are not left behind during the transition.

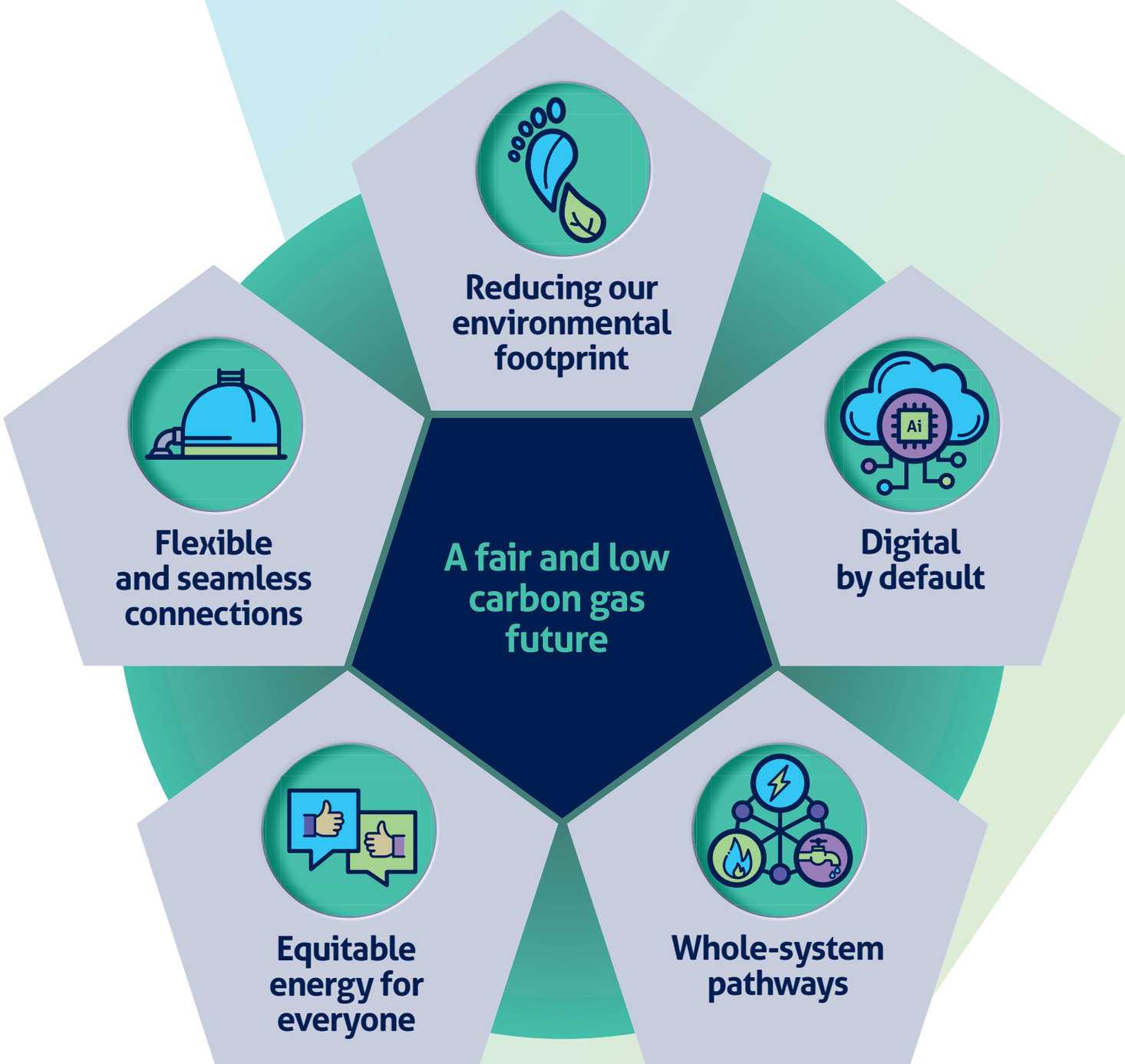
Theme 1: Reducing our environmental footprint
To reduce the environmental impact of our businesses through advanced detection and remedy whilst investing in low-carbon construction and maintenance technology.

Theme 2: Digital by default
To promote the use of open, interoperable data and digital tools to make every decision smarter, faster, and more transparent.

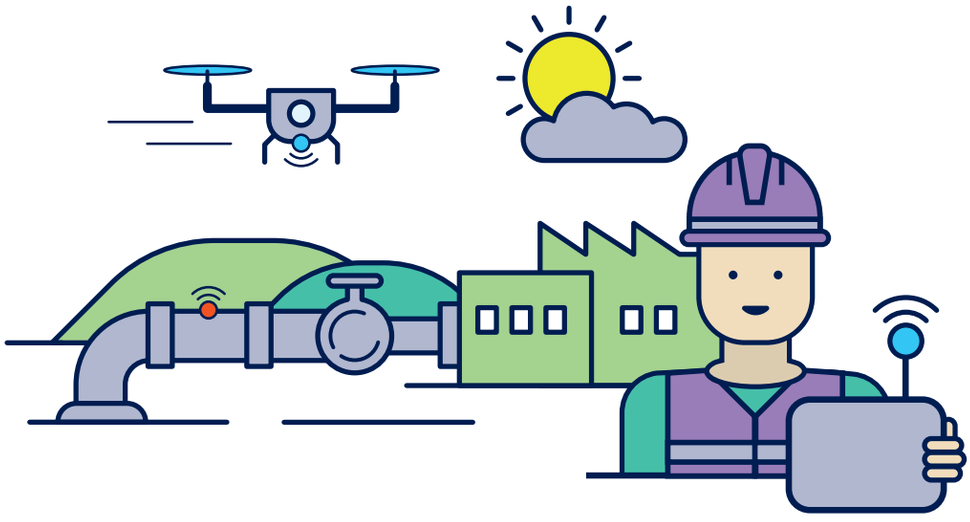
Theme 3: Whole-system pathways
To facilitate and innovate towards whole system optimisation with the wider energy industry and ensure that the role of gas is built into any regional and strategic planning activities.

Theme 4: Equitable energy for everyone
To deploy innovation to ensure that our customers in vulnerable situations are not left behind during an energy transition and they have access to the technology and tools to reduce energy consumption.

Theme 5: Flexible and seamless connections
To enable a clean, resilient gas future by connecting, blending and transporting more green gases and facilitating new, flexible demand side applications.



Theme 1: Reducing our environmental footprint



Theme description

Theme goal – To reduce the environmental impact of our businesses through advanced detection and remedy whilst investing in low-carbon construction and maintenance technology.

Theme description – Although long-term gas demand is expected to decline, gas will continue to play an important role in the future energy system. It will remain essential for supporting households, businesses and industry, particularly during periods of high demand and system stress. As gas network operators, our priority is to deliver safe, reliable, and resilient services that meet customer needs now and, in the years, ahead.

During RIIO-3, there will be a strong focus on safety, efficiency, and sustainability. Maintaining high safety standards remains fundamental, alongside improving operational efficiency to deliver best value for customers and stakeholders, while supporting the transition to a lower carbon energy system.

Resilience will become increasingly important as networks face emerging and evolving risks, including cyber and physical security threats, climate change impacts, and challenges related to workforce skills and supply chain capability. Protecting network systems from these risks will be essential to maintaining reliable operations and continuity of supply under all conditions. Reducing the environmental impact of gas networks is also a key priority. This includes lowering emissions, reducing gas leakage and minimising waste across operations. More efficient and sustainable approaches to network design, operation and maintenance will help limit environmental impacts while supporting wider decarbonisation goals.

Innovation will be central to delivering these outcomes. By adopting new technologies and ways of working, networks can improve performance, reduce costs and cut emissions. Smarter, data driven approaches will strengthen asset health and integrity management, extend asset life, and enhance overall network performance, ensuring gas networks remain safe, resilient, and fit for the future.

Innovation challenges

The challenges in this area have a heavy focus on our environmental impacts and ways in which we can reduce these. Focus on reductions in leakage, venting and emissions during maintenance, construction and operations is key to keeping the gas in our networks until the point of use. Additionally, we want to look at ways we can improve our resilience to the impacts of more extreme climate events in this country alongside reducing waste in our supply chain and developing our low carbon fleets.

1. Identify and deliver improvements to ensure optimum operational efficiency, while maintaining high standards of safety.
2. Innovate to better monitor and ultimately reduce leakage.
3. Identify opportunities across the supply chain to reduce waste.
4. Reduce venting and emissions during maintenance, construction and operation.
5. Deliver low carbon transport solutions for our fleet.
6. Implement technologies that increase our climate resilience.
7. Support the decarbonisation of UK PLC and encourage economic growth.

Case study: Digital Platform for Leakage Analytics and Advanced Leak Detection (Cadent)

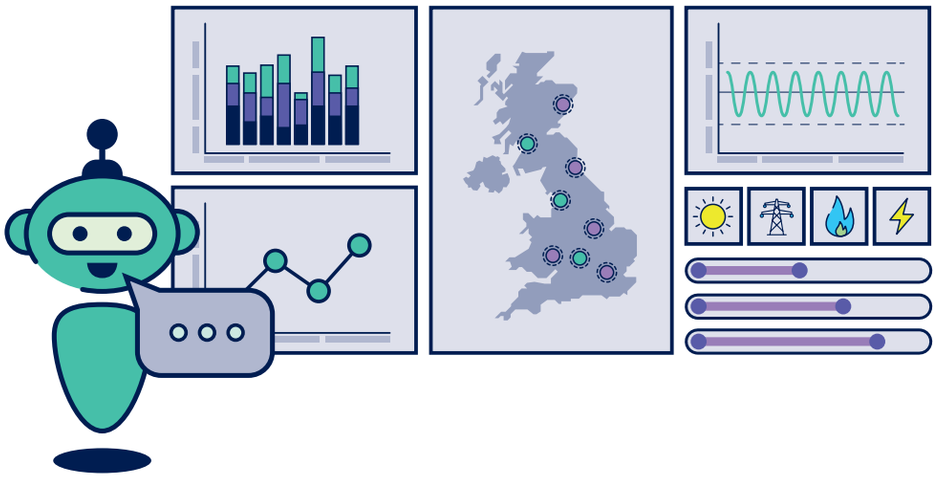
The Digital Platform for Leakage Analytics (DPLA) project has shown how combining real-time data, observed using Advanced Leak Detection (ALD) technologies, and coupled with sophisticated probabilistic hydraulic models will allow Gas Distribution Networks (GDNs) to quantify emissions and pinpoint the exact location of leaks, enabling rapid targeted repairs and strategically targeted asset interventions.

Trial of ALD-equipped vehicles are already underway in the North London and East of England Cadent networks, delivering real-time leak location data and quantification for swift, targeted repairs.

Following successful completion of the DPLA project in June 2025, we're now looking to complement the rollout of ALD technology with the deployment of DPLA across all four Cadent networks at the start of RIIO-3. This will empower a decisive shift from reactive repairs to a proactive, strategic approach, optimising asset interventions for maximised emissions reduction and improved network safety.

The full implementation and rollout of DLPA and ALD across the networks is projected for completion within the first two years of RIIO-3. This phased implementation means asset interventions will be able to be prioritised within the first year of RIIO-3, and will ensure immediate value delivery, while we continue to refine and optimise the rollout approach.

Theme 2:
Digital by default



Theme description

Theme goal – Use open, interoperable data and digital tools to make every decision smarter, faster, and more transparent.

Theme description – For Gas Networks, data underpins how we operate and make decisions. Every part of the network depends on accurate, reliable information, and this reliance will only increase as we progress through the energy transition. As the industry evolves, easy access to data and effective use of digital tools will become ever more critical.

These priorities will shape our approach in RIIO-3, where innovation will play a central role in improving how we manage, share, and derive value from data. Developing modern, open, and future ready data infrastructures will provide a strong foundation to support new technologies, ideas, and ways of working across gas networks.

Strong data governance is equally essential. Improving how data is managed, stored, and controlled will enhance network resilience and strengthen protection against cyber security risks. Clear standards and consistent processes help maintain data quality, reduce errors, and support safe, reliable operations. As cyber threats continue to grow in sophistication, robust data governance will ensure systems remain secure, trusted, and resilient.

Interoperability is another key priority, both within our own systems and across the wider energy sector. When systems can communicate and share information effectively, collaboration becomes faster and more impactful. Improved interoperability enables networks to share insights, coordinate activities, and respond more efficiently to industry wide challenges, while supporting whole system thinking across different energy vectors.

Emerging technologies offer significant opportunities to unlock further value from data. Artificial intelligence, machine learning, and digital twins can help analyse complex datasets, identify risks earlier, predict maintenance needs, and model asset behaviour in real time. Together, these capabilities will improve efficiency, reduce costs, and support more strategic planning, enabling Gas Networks to deliver safe, reliable, and forward looking services throughout the energy transition.

Innovation challenges

The digital landscape that we operate in is fast paced and ever changing which lends itself perfectly for innovation projects to provide proof of concepts and trial new solutions that push our use of digital tools. The world has changed significantly with the advent of artificial intelligence and greater computing power and, as gas networks we need to seize this as an opportunity whist also protecting our critical national infrastructure. Challenges in this area also focus on data interoperability, cyber security and emerging areas such as quantum.

1. Support the development of suitable digital and data standards to improve interoperability.
2. Identify opportunities to utilise artificial intelligence (AI) and machine learning (ML) to improve data analytics for cost reduction, asset management & improved resilience.
3. Identify and use tools and technologies that support interoperability and open data functionality where possible.
4. Investigate new AI based technologies and the associated benefits for gas network operations & asset management.
5. Test and explore ways of improving data acquisition, remote connectivity and asset/ network control without compromising cyber security.
6. Innovate in areas of emerging digital technology such as both quantum computing and sensing.
7. Promote and implement the use of digital twin technology to support reductions in whole life cost and/or improve resilience of the system.

Case study: Collaborative Visual Data Twin (National Gas)

The Collaborative Visual Data Twin (CVDT) project looked to develop a robust, low-cost solution for combining virtual twins and data twins into a single, robust digital twin.

In the first phase of the project, the FutureGrid offline test facility was used as a case study to create a series of site surveys using photography, drone footage and laser scanning technology. The data gathered was used to create different visual 3D representations of the site, including engineering and rendered models. The project also looked at the requirements for a data storage and management system that can support both historic and live site data. This system was used with live data from the FutureGrid project and was used throughout the commissioning of the test facility.

The outcomes from phase one were used during the second phase to further develop and refine the FutureGrid phase one model, as well as developing a 3D Computer-Aided Design (CAD) model for the FutureGrid HyNTS Compression project. The project successfully developed and tested the transfer of site information and live data, displaying this in several applications.

Visual models were used to create an animated application illustrating the 3D hazardous area zones associated with natural gas, hydrogen and hydrogen blends for the FutureGrid site. Asset data associated with hydrogen readiness (material grade, diameter, age etc) for the existing pipelines on the National Transmission System (NTS) was combined with GIS data and presented in a network model, highlighting the suitability of different sections of the existing NTS infrastructure.

Visual models were also generated and rendered for stakeholder engagement, including models of the FutureGrid facility for use with a virtual reality (VR) headset. An Augmented Reality (AR) application was also developed using QR codes strategically placed on a sitemap – each marker linked to a site visitor portal, displaying a digital representation of the site with access to asset information and data for each area of the site.

Theme 3:
Whole-system pathways

Theme description

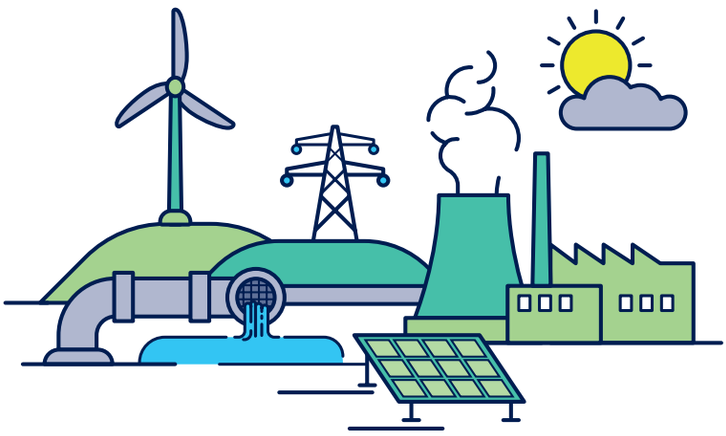
Theme goal – To facilitate whole system optimisation with the wider energy industry and ensure that the opportunities gas networks offer is built into regional and strategic planning activities.

Theme description – A whole energy system approach is essential to achieving the UK's decarbonisation goals while maintaining secure and resilient energy supplies. This means viewing the energy system as an interconnected network rather than a set of separate components. Electricity, gas, hydrogen, biomethane as a fuel and emerging low carbon technologies all interact, so effective planning must align strategies, resources and ambitions across the entire sector. A coordinated approach helps ensure the future energy system is efficient, adaptable and capable of meeting changing demands.

In RIIO-3, a key focus will be improving whole system optimisation, particularly understanding how gas networks can best support electrification. While gas infrastructure will continue to play an important role, the challenge lies in identifying when and how it can enable the transition to cleaner energy. This includes exploring how gas networks can provide flexibility, meet local and regional needs, and integrate with emerging technologies.

Innovation is central to enabling this progress. It supports new ways of sharing information, collaborating across organisations, and designing projects that test new approaches and technologies. Building on work from RIIO-2, organisations will continue to strengthen whole system modelling tools to improve forecasting and scenario analysis at national, regional and local levels. High quality data and robust modelling are critical for informed decision making across the energy system.

Another important area is managing gas network decommissioning in a way that minimises costs to customers while ensuring safety. As the network evolves, assets must be taken out of service efficiently and fairly, supporting a smooth transition for communities. Overall, collaboration, innovation and improved system understanding will be central to delivering a resilient, low carbon energy system under RIIO-3.



Innovation challenges

The role of gas in this country's whole system energy landscape has been well documented, challenges in this area focus on developing and implementing the tools and data for modelling and forecasting this energy system with gas carrying out a vital role. We are also keen to focus on areas of innovation around hybrid heating, understanding the balance of storage capabilities and how potential disconnections can affect our communities.

1. Developing the data and tools in modelling and forecasting which will help deliver effective national, regional and local area energy planning and forecasting to support the National Energy System Operator in its obligations.
2. How to balance the supply and demand profiles with storage capabilities.
3. Practicing hybrid heating at scale to understand the customer experience, cost, environmental, resilience and operational benefits of a system that includes, but more closely integrates, energy vectors.
4. To understand the regulatory and safety implications to disconnections and the impact on our customers.

Case study: Pathfinder (Wales and West Utilities)

Pathfinder is an energy modelling tool built to support local and regional planning, providing invaluable system insights to understand the operational implications of a decarbonisation strategy, allowing a variety of stakeholders to understand engineering trade-offs.

The modelling tool has gone through several iterations through RIIO-1 and RIIO-2, with each iterations designed to further increase the value of the tool for energy network stakeholders.

There are four versions of Pathfinder:

1. **Pathfinder Plus:** the most comprehensive version that enables the user to model energy scenarios for any size population, by inputting variables that affect electricity and gas supply and demand.
2. **Pathfinder Lite:** a more user-friendly version, giving wider access to the tool. Inputs and outputs are simplified, while still delivering similar results to Pathfinder Plus.
3. **Pathfinder Business Parks:** allows for business parks with multiple occupants (up to 10) to be analysed at once. This version can only be used to model commercial sites.
4. **Pathfinder Retrofit**: is suitable for both local authorities and housing associations to analyse their existing housing stock and users can upload their own data to the tool.

Pathfinder has been used as part of 33 projects, with 213 Pathfinder 'runs' completed as part of this work. The tool has also been offered and shared with over 60 different organisations and local authorities.

Theme 4: Equitable energy for everyone

Theme description

Theme Goal – To deploy innovation to ensure that our customers in vulnerable situations are not left behind during an energy transition and they have access to the technology and tools to reduce energy consumption.

Theme Description – Gas remains essential to the UK's energy security, and customers continue to sit at the heart of gas network activity. During RIIO-2, networks prioritised delivering high quality customer service at the lowest possible cost. As we move into RIIO-3, this commitment becomes even more important as the energy system evolves and customer expectations change.

Innovation will be critical to meeting these expectations. A key opportunity lies in improving how networks communicate planned maintenance and potential disruptions. Clearer, more timely information will help customers understand what to expect and make informed decisions. Innovation can also support the development of better, more tailored options for customers during supply interruptions, ensuring solutions are practical, efficient, and responsive to different needs.

A deeper understanding of customer vulnerability is central to this approach. Customers experience the energy system differently, and some face barriers to accessing information or support. By recognising these differences, networks can design services that are more inclusive, including the use of non-digital communication channels for those with limited confidence or access to technology. Providing accessible and varied communication methods ensures all customers can receive the information they need during planned or unplanned events.

Multi-occupancy buildings (MOBs) present additional challenges, often linked to poor insulation, fuel poverty, and inefficient heating systems. Targeted solutions can help improve reliability, affordability, and efficiency for residents. As networks transition towards net zero, affordability remains critical. Supporting customers to reduce consumption and adopt smarter energy solutions will help manage costs while contributing to wider decarbonisation goals.

Innovation challenges

Customer vulnerability has been a key focus area in energy innovation for many years and will continue to be so in RIIO-3, challenges in this area centre on ensuring that those with a wide range of challenges are not unfairly affected by the energy transition and the advancements in digital tools for energy saving. We want to focus on innovations for multi occupancy buildings and supporting those during gas supply emergencies.

1. How can gas networks support vulnerable customers with a range of challenges including sight, hearing, reduced smell and other health related issues.
2. Support customers in reducing their energy consumption and bills in the home.
3. Innovative ways to communicate to vulnerable customers who experience barriers to technological fluency.
4. Develop solutions for consumers in the event of gas supply interruptions particularly for those in vulnerable situations; those with health issues, and/or those with young children.
5. We will look to deliver solutions for the transition of multi occupancy buildings (MOBs) to alternative heating systems.
6. Empower customer facing colleagues by providing them with appropriate tools enabling them to offer the right support as soon as possible to support "independent living" for those customers that need it most.

Case study: Customer Vulnerability Mapping Tool (Northern Gas Networks)

Work began in 2021 on a collaborative platform that combines data from across the business with open-source and paid-for external data, to create an interactive map to allow users to:

- Identify where customers in vulnerable situations (CIVS) are located.
- Understand which factors affect a community's resilience.
- Identify gaps in provision.

For example, it might show us that we need to run an awareness campaign on services for fuel poverty in a certain area, or prepare our response for a storm or a flood in another.

The benefits of using the tool include:

- Initiatives and activity can be better targeted to meet the needs of CIVS, saving time, money, and effort.
- Users can view areas most affected by climate impacts.
- The tool focuses on measurements of potential vulnerability, allowing users to target their activities to those customers.
- CIVS will be better served and can be offered more holistic engagement thanks to being able to view other organisations' activities and operational areas.
- The geographic nature of the data will help users to better understand a community and meet its specific needs. It also brings otherwise disparate organisations together in one area, such as different charities' operational areas, so that customers and communities can access the support available to them.

Theme 5: Flexible and seamless connections

Theme description

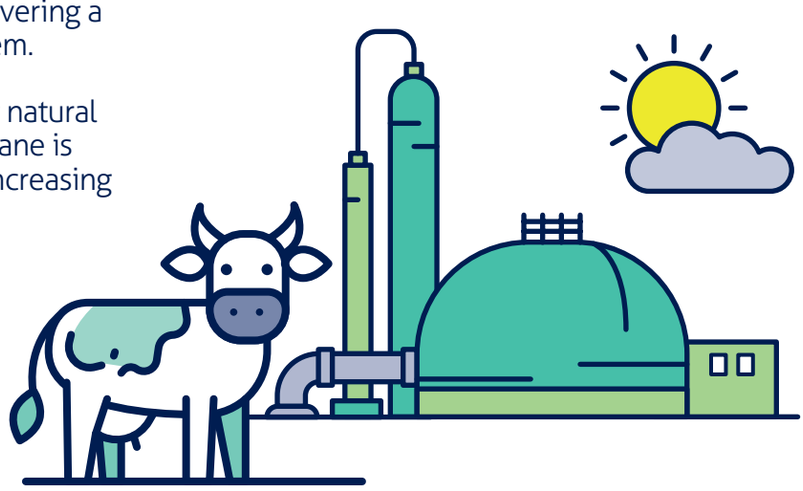
Theme goal – Enable a clean, resilient gas future by connecting, blending and transporting more green gases and facilitating new flexible demand side applications.

Theme description – We, as gas networks, are committed to supporting the UK ambition of achieving net zero by 2050 or before. Since the commitment was introduced in 2019, decarbonisation policy has continued to evolve, with green gases becoming increasingly important. Gases such as biomethane, e-methane and low carbon hydrogen will be central to delivering a cleaner, more sustainable energy system.

A key part of the transition is replacing natural gas with greener alternatives. Biomethane is already produced across the UK, and increasing the number of biomethane connections will reduce the carbon intensity of gas supplied through the network. In parallel, preparing the gas system for blended hydrogen will support wider decarbonisation. This requires coordinated action across transmission and distribution networks to ensure infrastructure, operations, and processes can safely and reliably transport hydrogen.

Innovation is essential to enabling this transition. New technologies must be developed and tested to allow green gases to operate at scale, while innovation also supports the development of policies, standards, and processes needed to manage them effectively. Ongoing evidence gathering on green gas performance will help inform future planning and ensure decisions are based on robust data.

Together, these innovation activities will reduce the carbon content of gas delivered through the network, support cost effective pathways to net zero, and improve system flexibility. Continued collaboration, research, and investment will be critical to building a resilient, low carbon gas system capable of meeting future energy needs.



Innovation challenges

To support the ever-changing gas landscape, networks need to improve the process around connections, not just for incoming, new gas supplies but also new demand side connections such as the rise in data centres, district heating and transport. We need to think innovatively to reduce the time it takes to build these connections through standardised designs, new materials and better ways of working. Promoting a drive in biomethane on our networks is also key and responding to the upcoming governmental decisions on what role hydrogen will play in our networks will be vital from a green gas perspective.

1. Reduce the time taken for new green gas connections through change and innovation including standardising designs and modular building.
2. Improve the processes required to facilitate biomethane/green gas connections.
3. Innovate to facilitate flexible demand side gas connections such as Data centres, district heating or transport
4. Respond to the government decisions on heating and hydrogen with, where appropriate, asset preparation and services for transition to other fuels.
5. Investigate and practice ways of reducing procurement lead times.
6. Provide evidence for policy decisions relating to the transport of green gases.
7. Deliver innovation that supports the reduction of propane to improve the environmental and economic profile of biomethane.
8. Deliver innovation that enables billing reform as an enabler for potential future scenarios with much greater levels of non-fossil gas.

Case study: Biomethane Islands (SGN)

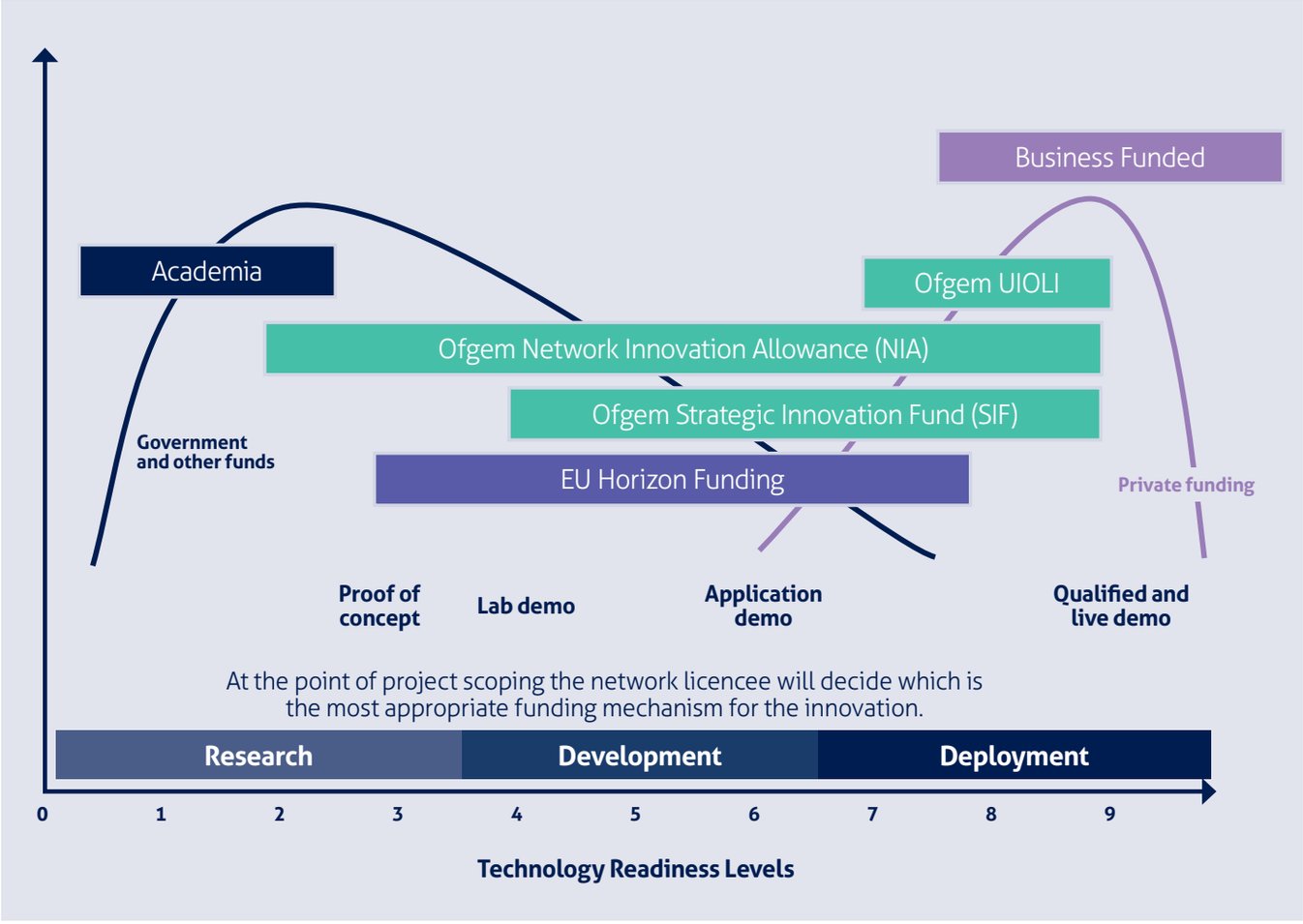
A Biomethane Island (BI) constitutes an isolated area of the gas network where the sole supply of gas will be provisioned by low carbon biomethane for all customers. This concept supports the development of self sufficient, low-carbon energy systems that contribute to the decarbonisation of the gas network.

As of 2024, approximately 100 embedded biomethane sites inject enriched biomethane into the national gas network, meeting approximately 2% to 3% of the UK's total annual gas demand. Despite this progress, several challenges limit its full potential, including feedstock availability, gas quality variations, grid capacity, demand variation, and regulatory constraints that require biomethane enrichment, undermining its green credentials. With these obstacles, producers may need to curtail injection and explore more profitable markets.

While the Green Gas Support Scheme supports biomethane production in Great Britain, there is a need for further incentives and schemes to boost unpropanated biomethane uptake. A comprehensive value creation model is essential to address these challenges, ensuring biomethane can play a more significant role in the UK's energy transition.

The Biomethane Islands project evaluates the feasibility of converting three locations into BIs, focusing on key aspects to ensure sustainability metrics, including site suitability, gas network adjustments, feedstock availability, carbon intensity, waste management, and potential environmental impacts. It will incorporate production optimisation and storage solutions to ensure security of supply, accounting for demand variations. Additionally, the project will assess financial aspects, including funding options and regulatory compliance. As a result, a comprehensive framework will be created, enabling replication across Great Britain, paving the way for future BIs.

Funding mechanisms



Business Funded

To cover commercially ready applications and tools, each gas network is committed to spend business as usual (BAU) funding on innovation and whilst the results of this work does not have to be disseminated to the wider industry it is still encouraged that we work together and share findings as appropriate.

Academia

Academic research often covers very low Technology Readiness Level (TRL) concepts and thinking which is funded through joint working groups between the universities. There is some overlap between the end of this and NIA, and it is common that the energy networks will use NIA to collaborate with academia on topics.

Ofgem (Use-it-or-lose-it) UIOLI

Throughout the RIIO-3 price control, energy networks have access to a variety of UIOLI allowances specifically designed to either facilitate the rollout of previous innovations or enable small projects to help set out a future reopener application to Ofgem on topics such as AI and decarbonisation.

Network Innovation Allowance (NIA)

The NIA is a set allowance each energy network receives as part of its price control allowed revenue. The NIA provides funding to energy networks to fund smaller technical, commercial, or operational projects directly related to the licensees' network. The innovation projects should have the potential to deliver benefits to the licensee and its customers and following on from RIIO-2, NIA projects should facilitate the energy system transition and/or address consumer vulnerability.[1]

Collaboration and dissemination is key within NIA and gas networks regularly work together on joint challenges, followed by ensuring the outputs are shared with the other energy networks and the public.

Strategic Innovation Fund (SIF)

The SIF supports large-scale transformational research and development projects. Funding is provided for projects which can address the Innovation Challenges set by Ofgem which have been agreed through the newly formed Energy Network Innovation Taskforce (ENIT). ENIT is a landmark initiative commissioned by Innovate UK and Ofgem to set bold, long-term, customer centred and outcome focused Innovation Challenges for SIF.

Additionally, in RIIO-3, SIF will include a Deployment Fund which is a dedicated trial fund that has been allocated to support the transition of proven innovations into operational deployment across the GB energy system. It provides an opportunity for Licensees to deploy innovations that deliver benefits to the energy system, consumers, and other network users. This application based fund will be open to all energy networks and for any innovation project funded by NIA, SIF, or equivalent.

Differences between NIA and SIF

The networks are funded for NIA projects as part their RIIO price control allowed revenue. The SIF is an additional funding mechanism which network licensees can apply for, under a competitive process organised by Innovate UK – UKRI. In contrast to the NIA, the SIF adopts a three-stage approach for project funding, namely: Discovery phase (for feasibility studies), Alpha phase (for experimental development) and Beta phase (for building, operating and/or demonstrating). Ofgem is the decision-maker in relation to the SIF whereas for the NIA innovation funding allocations are made by the networks. Innovate UK - UKRI is responsible for delivery of the SIF (administering the funding, monitoring the delivery of projects and supporting third-party innovators), in line with the SIF Governance Document.

EU Horizon Funding

Outside of the UK the gas networks have also worked with other EU gas transporters on shared challenges and so access to the €95.5 billion of innovation funding for 2021–2027 remains an area of interest.

[1] https://www.ofgem.gov.uk/energy-regulation/how-we-regulate/energy-network-price-controls/network-innovation-allowance

Working together

To ensure consumers money is spent wisely and building on the processes developed during RIIO-2, gas network companies are committed to promote collaboration during our innovation projects and remove the risk of duplication across our portfolios.

By working together on our innovation projects, we can:

1. Share best practice and subject matter expertise across all of our businesses.
2. Ensure that project outputs are applicable across the whole gas industry in the UK.
3. Prevent any risk of duplication.
4. Present a unified view of the innovation benefit for the consumer.

To prevent duplication in the early stages of project inception all of the gas networks need to raise their project ideas at the Gas Innovation Governance Group managed by Future Energy Networks (FEN). Within this forum each project is tracked and every network has the opportunity to raise any duplication concerns with projects they are aware of covering all price controls back to RIIO-1 and additionally request to join the project consortium at this early stage. Only once this step has been completed can a project move to sanction and delivery at which point they are registered on the public facing platforms. Smarter Networks Portal[2] and FEN Innovation Portal.[3]

Case study: Examples of great collaboration

Throughout RIIO-2 the gas networks have worked on many joint projects showing our ability to work on shared challenges and combine our technical expertise for a better outcome. One such example where all the networks have worked well together on is on the multi-phase Blending Implementation Programme. This project aimed to design the market framework modifications necessary to facilitate hydrogen blending, and to develop a full operational implementation plan. With a clear, wide-reaching scope, it was vital that all network were involved in this project. The project has now moved onto the next stage and has provided the clarity we all need to move forward on hydrogen blending should it be needed.

Gas networks have also worked closely with their Electricity counterparts and NESO on a multitude of different projects and will continue to do so in RIIO-3. Notable examples include whole system modelling projects such as the Future Operability of Gas for System Integration (FOGSI) SIF project, the Supporting Warm Spaces NIA focusing on supporting customers in vulnerable situations and the Virtual Energy System NIA carrying out an industry-wide initiative to develop a digital twin of the entire GB energy system.

[2] https://smarter.energynetworks.org/?ProjectID=1268
[3] https://portal.futureenergynetworks.org.uk/content/fen

Disseminating our work

Dissemination is a key part of any innovation project and is also a fantastic way to communicate about all the great work we do across the sector and collectively help improve the industry together.

Sharing our project outputs, ideas, concepts or just a story to tell will be a large part of what we do in RIIO-3 and this will be completed in many different formats.

Conferences & events – As gas networks we attend several key conferences throughout the year and also attend a variety of other events or workshops to help disseminate about the work we are involved in. Key conferences include Utility Week Live, Innovation Zero, All Energy and the annual Energy Innovation Summit where we will speak at or host stands to share our outputs.

Webinars – An increasingly popular method of sharing our projects is through webinars hosted online for people to drop into and hear about our progress. These can be hosted by FEN or the gas network and allow a certain level of interaction from the audience without taking a large amount of time.

Workshops – To promote the interaction aspects we are also hosting a number of workshops either in person or online allowing the gathering of ideas, thoughts or comments and working through a challenge with a selection of interested stakeholders.

Internal events – Information sharing is also carried out internally within our businesses to promote the work we do, share good ideas and bring in challenge statements or problem areas that become innovation projects of the future.

Documents – From a dissemination perspective all of the gas networks submit their annual progress/closure reports by July which summarises all the innovation funded work under NIA for that 12 month period. These individual project reports are collated into an Annual Summary report for each network and a joint summary from us all on the gas side, which is collated by FEN[4]. Additionally, SIF reporting happens on a project by project basis and as a concept moves from Discovery to Beta there will be regular project stage gate documents uploaded to the company pages and the central portals. Project registration, progress and closure reports can be found on the Smarter Network Portal[2] and the FEN portals[3].

For a list of our upcoming dissemination events hosted by FEN please see our Events page: https://www.igem.org.uk/future-energy-networks/fen-events.html

[4] https://www.igem.org.uk/future-energy-networks/publications.html

Strategy process for update

This is the bi-annual update of the Gas Networks Innovation Strategy and has coincided with the start of RIIO-3 and as such the networks have been developing their own Innovation Strategies for their RIIO-3 business planning processes.

To build this combined strategy we have collated all the key messages across the gas industry Business Plans into the 5 themes discussed in this document. Following this activity a stakeholder consultation process was carried out, offering the opportunity for the community to come together and discuss our focus areas. This webinar was well attended with over 130 participants joining throughout the workshop including from Ofgem, UKRI, the gas sector, innovators, start-ups and beyond. We used a Miro board to collate all the comments and updates to the challenges alongside new ideas, some of the key amendments following the consultation can be seen in the table below:

Following this webinar there was a 2-week window for any of the attendees or those that could not join to add in their comments / ideas in and a feedback form was launched. Bilateral conversations have also been undertaken regarding this document with NESO and others allowing for more detailed feedback.

Updating this strategy in two years' time will follow a similar process to ensure we have alignment and comments from the wider stakeholder community and within our internal teams.

1	**Leakage and Venting should be split out into separate challenges.**	**completed**
2	**Climate resilience is a key focus area that was missing.**	**added**
3	**Under data, modelling and forecasting should be separated.**	**completed**
4	**Data interoperability is a key area to focus on.**	**added**
5	**Digital twin technology should be a new challenge area.**	**added**
6	**A new challenge area was needed for hybrid home heating.**	**added**

How to get in contact

The door is always open for speaking to the gas network Innovation teams, please see their respective Innovation pages below:

Cadent – Your Gas Network	https://cadentgas.com/about-us/a-culture-of-innovation
national gas	https://www.nationalgas.com/innovation
Northern Gas Networks	https://together.northerngasnetworks.co.uk/get-involved/innovation/
SGN	https://sgn.co.uk/about-us/innovation-sgn
WALES&WEST UTILITIES	https://www.wwutilities.co.uk/about-us/future-of-energy/innovation/

For further information on Future Energy Networks (FEN):

fen – future energy networks	https://www.wwutilities.co.uk/about-us/future-of-energy/innovation/

In conjunction with

fen
future energy networks